

181  
an integrated channel manager connected between the channels and the operation means, the integrated channel manager having (i) a first interface layer for interfacing the channel-specific components of each channel, (ii) a second interface layer for interfacing the operation means, and (iii) a third interface layer between the first and second interface layers and including at least one application service connectable to any channel in a channel-independent manner for performing one or more channel-independent functions using data supplied by the operations means, wherein the operations means is unaware of the function being performed by an application service;

wherein each application service is comprised of Presentation, Function, and Data Management elements, the Presentation element being application logic that controls presentation of information to a user by the channels, the Function element being application logic that controls business logic for the application service, and the Data Management element being a collection of data and associated logic that manages data access and integrity.

2. A multi-transaction services system according to claim 1, wherein (i) the plurality of channels comprise financial service channels, (ii) the operation means comprises a plurality of financial service operations means, and (iii) the application service comprises a plurality of business application services.

3. A multi-transaction services system according to claim 2, wherein the business application services comprise at least one of a balance inquiry, an account credit, an account debit, a cash deposit, a cash withdrawal, a cheque deposit, a cheque withdrawal, a loan inquiry, a mortgage inquiry, and an insurance inquiry.

4. (Amended) A multi-transaction services system according to claim 2, wherein the financial service channels comprise at least [ two ] one of an automated teller machine, a self service sales terminal, a home banking system, a digital telephone connection, a financial services branch office, a financial branch sales office, and an interactive television system.

5. (Amended) A multi-transaction services system according to claim 2, wherein the [ business application services ] operations means comprise at least one of a transaction processing host computer, an item processor, a relationship management database, a financial call center, and an external financial database.

6. A multi-transaction services system according to claim 2, wherein the integrated channel manager includes: a first layer (L1) for receiving customer requests for a plurality of different channel-specific financial services and providing access to the operation, administration, and maintenance of the service requests; a second layer (L2) for monitoring the operation of the business application services; a third layer (L3) for providing interfaces between the plurality of channel-specific services and the plurality of financial service operation means, and providing the business application services; a fourth layer (L4) for providing application enabling services; and a fifth layer (L5) for providing distributed system services.

7. A multi-transaction services system according to claim 6, wherein the second, fourth, and fifth layers (L2, L4, L5) comprise the middleware NCR Top End.

8. A multi-transaction services system according to claim 1, wherein (i) the plurality of channels comprise retail service channels including at least two of a point of sale service, an

automatic vending service, and a loyalty card-service, and (ii) the operation means comprises at least a relationship database.

---

9. (New) A multi-transaction services system according to claim 1, further comprising a Common Software Architecture that provides a layered structure built upon business activities, business objects required to perform those activities, and a technical foundation supporting business needs.

10. (New) A multi-transaction services system according to claim 9, wherein the Common Software Architecture is an architectural interface for the business activities, business objects, and technical foundation with the Presentation, Function, and Data Management Elements.

11. (New) A multi-transaction services system according to claim 10, wherein the Common Software Architecture is an interface that isolates the Presentation, Function, and Data Management elements from the channel-specific components and the operations means.

12. (New) A multi-transaction services system according to claim 9, wherein the Common Software Architecture includes a Mini Object Management System (MOMS) that provides a single interface that shields the channel-specific components and the operations means from specifics of the integrated channel manager.

13. (New) A multi-transaction services system according to claim 12, wherein the MOMS provides an organized environment for running a collection of objects.

14. (New) A multi-transaction services system according to claim 13, wherein the MOMS provides tools that allows the construction of objects.

15. (New) A multi-transaction services system according to claim 13, wherein the MOMS allows the objects to exchange semantic-level metadata.

16. (New) A multi-transaction services system according to claim 15, wherein the metadata allows loosely-coupled objects to dynamically discover each other's services and behaviors at run time.

17. (New) A method for providing multi-transaction services, comprising:  
connecting an integrated channel manager between a plurality of service request and supply channels and at least one operations means, wherein each channel includes channel- specific hardware and software and the operation means includes operation-specific hardware and software; and

providing a plurality of interface layers in the integrated channel manager for the connected channels and the connected operation means, the provided interface layers comprising (i) a first interface layer for interfacing the channel-specific components of each channel, (ii) a second interface layer for interfacing the operation means, and (iii) a third interface layer between the first and second interface layers and including at least one application service connectable to any channel in a channel-independent manner for performing one or more channel-independent functions using data supplied by the operations means, wherein the operations means is unaware of the function being performed by application service;

wherein each application service is comprised of Presentation, Function, and Data Management elements, the Presentation element being application logic that controls presentation of information to a user by the channels, the Function element being application logic that controls business logic for the application service, and the Data Management element being a collection of data and associated logic that manages data access and integrity.

18. (New) A method of providing multi-transaction services according to claim 17, wherein (i) the plurality of channels comprise financial service channels, (ii) the operation means comprises a plurality of financial service operations means, and (iii) the application service comprises a plurality of business application services.

19. (New) A method of providing multi-transaction services according to claim 18, wherein the business application services comprise at least one of a balance inquiry, an account credit, an account debit, a cash deposit, a cash withdrawal, a cheque deposit, a cheque withdrawal, a loan inquiry, a mortgage inquiry, and an insurance inquiry.

20. (New) A method of providing multi-transaction services according to claim 18, wherein the financial service channels comprise at least one of an automated teller machine, a self service sales terminal, a home banking system, a digital telephone connection, a financial services branch office, a financial branch sales office, and an interactive television system.

21. (New) A method of providing multi-transaction services according to claim 18, wherein the operations means comprise at least one of a transaction processing host computer, an item

processor, a relationship management database, a financial call center, and an external financial database.

22. (New) A method of providing multi-transaction services according to claim 18, wherein the integrated channel manager includes: a first layer (L1) for receiving customer requests for a plurality of different channel-specific financial services and providing access to the operation, administration, and maintenance of the service requests; a second layer (L2) for monitoring the operation of the business application services; a third layer (L3) for providing interfaces between the plurality of channel-specific services and the plurality of financial service operation means, and providing the business application services; a fourth layer (L4) for providing application enabling services; and a fifth layer (L5) for providing distributed system services.

23. (New) A method of providing multi-transaction services according to claim 22, wherein the second, fourth, and fifth layers (L2, L4, L5) comprise the middleware NCR Top End.

24. (New) A method of providing multi-transaction services according to claim 17, wherein (i) the plurality of channels comprise retail service channels including at least two of a point of sale service, an automatic vending service, and a loyalty card service, and (ii) the operation means comprises at least a relationship database.

25. (New) A method of providing multi-transaction services according to claim 17, further comprising providing a Common Software Architecture as a layered structure built upon business activities, business objects required to perform those activities, and a technical foundation supporting business needs.

26. (New) A method of providing multi-transaction services according to claim 25, wherein the Common Software Architecture is an architectural interface for the business activities, business objects, and technical foundation with the Presentation, Function, and Data Management Elements.

27. (New) A method of providing multi-transaction services according to claim 26, wherein the Common Software Architecture is an interface that isolates the Presentation, Function, and Data Management elements from the channel-specific components and the operations means.

28. (New) A method of providing multi-transaction services according to claim 25, wherein the Common Software Architecture includes a Mini Object Management System (MOMS) that provides a single interface that shields the channel-specific components and the operations means from specifics of the integrated channel manager.

29. (New) A method of providing multi-transaction services according to claim 28, wherein the MOMS provides an organized environment for running a collection of objects.

30. (New) A method of providing multi-transaction services according to claim 29, wherein the MOMS provides tools that allows the construction of objects.

31. (New) A method of providing multi-transaction services according to claim 29, wherein the MOMS allows the objects to exchange semantic-level metadata.